

We claim:

1. A process for preparing 1,6-hexanediol having a purity of $\geq 99.5\%$ by weight by catalytically dimerizing acrylic esters and catalytically hydrogenating the hexenedioic diesters obtained in this way to 1,6-hexanediol by
- a) dimerizing C_1 - to C_8 -acrylic esters in the presence of at least one rhodium compound to give mixtures of predominantly 2- and 3-hexenedioic diesters,
- b) hydrogenating the resulting dimerizing effluent in the presence of chromium-free catalysts comprising predominantly copper as the hydrogenation component and
- c) purifying the crude 1,6-hexanediol obtained in this way by fractional distillation.
2. A process as claimed in claim 1, wherein unconverted acrylic ester is removed from the dimerization mixture before the hydrogenation.
3. A process as claimed in either of claims 1 or 2, wherein the acrylic ester used is methyl acrylate.
4. A process as claimed in any of claims 1 to 3, wherein the hydrogenation is carried out over a catalyst which in the oxidic form has the composition
- $$Cu_aAl_bZr_cMn_dO_x$$
- where $a > 0$, $b > 0$, $c \geq 0$, $d > 0$, $a > b/2$, $b > a/4$, $a > c$ and $a > d$, and x is the number of oxygen atoms required per formula unit to preserve electronic neutrality.
5. A process as claimed in any of claims 1 to 4, wherein the dimerization is carried out at from -100 to 150°C and pressures of from 0.1 to 1 atm.
6. A process as claimed in any of claims 1 to 5, wherein the hydrogenation is carried out at from 100 to 350°C and pressures of from 30 to 350 bar.